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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,907	12/01/2003	John R. Seiver	34116US (KDK)	3296

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Richmond, Hitchcock, Fish & Dollar
PO Box 2243
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EXAMINER

KAPLAN, HAL IRA

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/724,907	Applicant(s) SEIVER, JOHN R.	
	Examiner Hal I. Kaplan	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 23, 24 and 27-42 is/are rejected.
- 7) ☒ Claim(s) 22, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/1/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Abstract, line 4 contains the word "liquid". It appears this should be "liquefied". Page 9, line 30 contains the word "dependant". It appears this should be "dependent".

Appropriate correction is required.

Drawings

2. The drawings were received on December 1, 2003. These drawings are accepted.

Claim Objections

3. Claims 6, 9, 12, 15, 16, 21, 30, and 32 objected to because of the following informalities: Claims 6, 9, 12, 16, 30, and 32 are objected to because the volt-amp values recited are not the correct product of the voltages and amperages recited. As to claims 6 and 36, the power rating should be approximately 69,000,000 volt-amperes; as to claim 9, the power rating should be approximately 72,500,000 volt-amperes; as to claims 12 and 32, the power rating should be approximately 43,470,000 volt-amperes; and as to claim 16, the power rating should be approximately 39,475,000 volt-amperes. Claim 15, line 11 contains the phrase "100,000,000 volt-amperes". It appears this should be "100,000,000 volt-amperes.". Appropriate correction is required.
4. Claim 21 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

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required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 21 depends from claim 20, which depends from claim 1. Claim 1, line 7 recites all of the features of claim 21.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-5, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the international patent application publication of Boenig (WO 98/09359) in view of the US patent of Pierrot (6,690,097).

As to claim 1, Boenig, drawn to a secure voltage bus, discloses a plurality of generators (12,15); a plurality of loads (18,21) that when summed determine a total power consumed which is provided by the generators (12,15); and a bus (11) electrically connecting each of the generators (12,15) with each of the loads (18,21)

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(see page 3, line 23 - page 4, line 7). Boenig does not disclose the bus being rated at less than the total power consumed. Pierrot, drawn to an electric power transmission and distribution system, discloses a bus (20) that is rated at less than the total power consumed but carries all of the total power consumed from a power source to loads (29) without overloading the bus (20) (see column 6, line 66 - column 7, line 19). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the bus of Pierrot with the system of Boenig, to enable the user to optimize the diameter of the bus relative to the current consumed.

As to claims 2-5, each generator (12,15) and load (18,21) of Boenig is connected to a different point along the bus (11) such that the total power consumed does not flow through any one point of the bus (11) or overload the bus (11) (see Figure 1).

As to claims 27 and 28, each generator (12,15) and the largest load are connected directly to the bus (11) without a transformer therebetween (see Figure 1).

8. Claims 6-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boenig in view of Pierrot as applied to claims 1-5, 27, and 28 above, and further in view of "MiniFlux Isolated Phase Bus Duct", General Electric, http://www.geindustrial.com/cwc/products?pnlid=5&famid=6&catid=26&id=isophase&lang=en_US, 1997 (GE).

As to claims 6, 7, 9, 10, 12, 13, 16, and 17, Boenig in view of Pierrot disclose all of the claimed features, as set forth above, except for the claimed voltage, operating current, and volt-amp values. GE discloses a bus that can be rated anywhere between 11,000 and 38,500 volts and between 1,200 and 40,000 amps, for a rating of between

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13,200,000 and 1,540,000,000 volt-amps. All of the claimed voltage, operating current, and volt-amp values are within this range. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use a bus rated at any of the claimed voltages, operating currents, and volt-amp values, with the system of Boenig in view of Pierrot, in order to increase the reliability of operation and minimize maintenance.

As to claims 8, 11, 14, 15, 18, and 19, Boenig in view of Pierrot do not disclose the claimed voltage, current, or volt-amp values. However, selections of operational levels for an electronic system are engineering decisions based upon the system's intended use and the expected requirements of the systems with which it will interface. See MPEP §2144.04 IV(A). In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed Cir. 1984), *cert. denied*, 469 U.S. 830, 225 U.S.P.Q. 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

9. Claims 20, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boenig in view of Pierrot as applied to claims 1-5, 27, and 28 above, and further in view of the US patent of Shirey (4,093,968).

As to claim 20, Boenig in view of Pierrot disclose all of the claimed features, as set forth above, except for the claimed 2000 volt and 1000 amp values. Shirey, drawn to resistors with heat sink, discloses a bus (11,12) rated at more than 2000 volts

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(72,500 volts) and more than 1000 amps (35,000 amps) (see column 2, lines 3-10). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have used a bus with the rating of Shirey, with the system of Boenig in view of Pierrot, in order to reduce the cost and protect the equipment from excess current.

As to claim 21, Pierrot discloses a bus (20) wherein the total power consumed exceeds the power rating, as set forth above.

As to claims 23 and 24, Shirey discloses a current limiter device that could be connected between the generators or loads of Boenig in view of Pierrot, instead of the fuses, which would allow the generators to share the loads while preventing a short circuit current rating of the bus from being exceeded (see column 2, lines 15-32).

10. Claims 29, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boenig in view of Shirey.

As to claim 29, Shirey discloses a bus (11,12) rating including a voltage level (72,500 volts) (see column 2, lines 3-10).

As to claims 34 and 35, discloses a current limiter device that could be connected between the generators or loads of Boenig in view of Pierrot, instead of the fuses, which would allow the generators to share the loads while preventing a short circuit current rating of the bus from being exceeded (see column 2, lines 15-32).

11. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boenig in view of Shirey as applied to claims 29, 34, and 35 above, and further in view of GE.

As to claims 30 and 32, Boenig in view of Shirey disclose all of the claimed

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features, as set forth above, except for the claimed voltage, operating current, and volt-amp values. GE discloses the claimed voltage, operating current, and volt-amp values, as set forth above.

As to claims 31 and 33, Boenig in view of Pierrot do not disclose the claimed voltage, current, or volt-amp values. However, selections of operational levels for an electronic system are engineering decisions based upon the system's intended use and the expected requirements of the systems with which it will interface. See MPEP §2144.04 IV(A). In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed Cir. 1984), *cert. denied*, 469 U.S. 830, 225 U.S.P.Q. 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

12. Claims 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Reijnen et al. (6,658,891) in view of Boenig.

As to claim 36, Reijnen, drawn to an offshore plant for liquefying natural gas, discloses a liquefied natural gas (LNG) facility comprising a plurality of compressors (65-67) to compress one or more refrigerants; a plurality of electric motors (83a,83b,113a,113b) to drive the compressors (65-67), wherein each motor contributes to a total power consumed and consumes power at a voltage level, a plurality of generators (not shown) to power the motors (83a,83b,113a,113b), each producing power at the voltage level, and a bus (84a,84b) rated at the voltage level (see column 2,

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lines 17-18 and 49-52; column 3, lines 1-5; and column 4, lines 16-20). Reijnen does not disclose each generator and motor being connected to the same bus.

Boenig discloses a bus (11) wherein each source (12,15) is substantially directly connected to a different point along the bus such that the total power consumed does not flow through any one point of the bus (see page 3, line 23 - page 4, line 7). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to connect each generator and each motor in a LNG facility to the same bus, in order to provide a stable power supply and reduce the effect of fault conditions.

As to claim 38, Reijnen discloses a plurality of turbines fired by the natural gas to drive the generators (see column 1, lines 56-60).

13. Claims 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reijnen in view of Boenig as applied to claims 36 and 38 above, and further in view of Shirey.

As to claim 37, Reijnen in view of Boenig disclose all of the claimed features, as set forth above, except for the claimed 2000 volt value. Shirey discloses a bus (11,12) having a bus rating wherein the voltage level (72,500 volts) exceeds 2000 volts (see column 2, lines 3-10). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use a bus with a rating over 2000 volts in a LNG facility, in order to provide a stable power supply, protect the equipment from excess current, and reduce the cost.

As to claim 39, Shirey discloses current limiter devices which can be distributed along the bus, thereby allowing the generators to cooperate in providing the total power

consumed while preventing a short circuit current rating of the bus from being exceeded.

14. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Page (4,467,220) in view of Pierrot.

As to claim 40, Page, drawn to a power switching apparatus, discloses a method of designing an electrical power system to supply power to electric loads, read on the claimed method, comprising the steps of:

- (a) summing the loads' power requirements, thereby calculating a real power consumed (full maximum demand load output);
- (b) calculating a quantity of generators $(m-1)$, each having a given generation capacity, to adequately supply the loads' power requirements (full maximum demand load output);
- (c) adding 1 to the quantity $((m-1) + 1 = m)$, thereby accommodating all of the loads if one of the transformers should cease supplying power to the system; and
- (e) determining where each transformer and each load should be connected to the bus in order to prevent the bus from becoming over-loaded (see column 10, lines 27-33).

Page does not disclose the bus being rated at less than the total power consumed. Pierrot discloses a bus (20) that is rated at less than the total power consumed (see column 6, line 66 - column 7, line 19). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the bus of Pierrot with

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the system of Page, in order to ensure continuity of power supply at optimal bus diameter relative to the current consumed.

15. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Page (4,467,220) in view of Pierrot, and further in view of Irwin, J. David, "Kirchhoff's Law", Basic Engineering Circuit Analysis, 1996, Section 2.2, pp. 27-31.

As to claim 41, Page in view of Pierrot disclose all of the claimed features, as set forth above, except for using Kirchhoff's current law. Irwin discloses the use of Kirchhoff's current law to calculate where sources and loads should be connected to a bus in order to have a desired current and voltage. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use Kirchhoff's current law, because every circuit must comply with Kirchhoff's current law.

16. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Page in view of Pierrot and Shirey.

As to claim 42, Page in view of Pierrot and Shirey disclose all of the claimed features, as set forth above.

Allowable Subject Matter

17. Claims 22, 25, and 26 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The following is a statement of reasons for the indication of allowable subject matter:

Claim 22 contains allowable subject matter because none of the prior art of record discloses or suggests at least one of the loads requiring more than the power rating of the bus, in combination with the remaining claimed features.

Claims 25-26 contain allowable subject matter because none of the prior art of record discloses or suggests the generators producing power at a voltage level of a largest one of the loads, in combination with the remaining claimed features.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patent to Liljestrand (7,079,367), US patent application publication to Liljestrand (2004/0245857), and international patent application publication of Bijlenga (WO 98/58435) disclose similar systems.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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